Zero G Mass Measurement Device (ZGMMD), Phase I

Completed Technology Project (2013 - 2013)

Project Introduction

The Zero G Mass Measurement Device (ZGMMD) will provide the ability to quantify the mass of objects up to 2,000 grams, including live animal specimens in a zero G environment, an innovative because there currently are no such devices available to perform mass measurement of smaller masses (< 2000 grams) in space. At present there are no tools on board the International Space Station (ISS) to measure low mass objects, which is a capability that is extremely important for biological research. The ZGMMD would provide the capability to quantify the mass of an object, while limiting the acceleration applied to the object. The ZGMMD would be capable of being used in the Microgravity Sciences Glovebox (MSG) or could someday be integrated with payloads such as the Plant Habitat (PH). The ZGMMD innovation provides a fundamental capability (measuring mass of an object) that would increase the capabilities of NASA's fundamental space biology program. A significant amount of fundamental biology has occurred on the ground that has utilized mass measurements; therefore to compare zero G results with previously conducted ground experiments, mass measurement capabilities should be provided. Successful completion of Phase I and II efforts would provide these previously mentioned capabilities.

Primary U.S. Work Locations and Key Partners

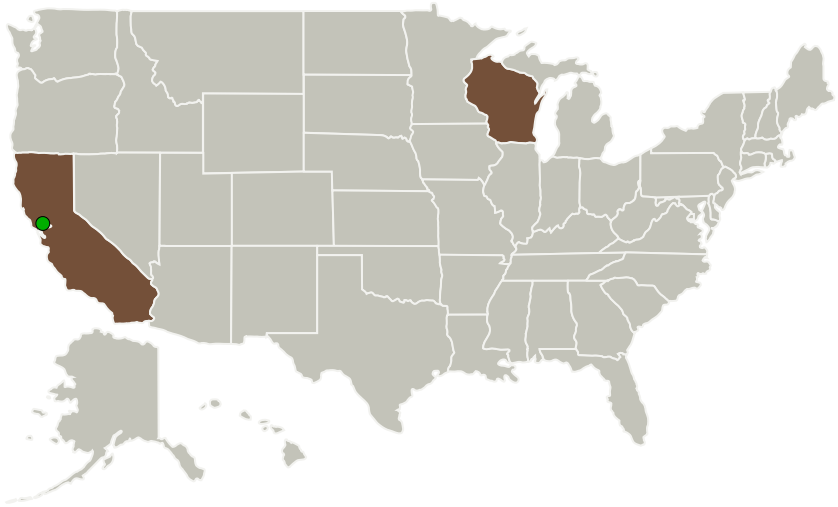

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Table of Contents

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Organizations Performing Work	Role	Type	Location
Sierra Nevada Corporation(SNC)	Lead Organization	Industry Women-Owned Small Business (WOSB)	Sparks, Nevada
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California
Orbital Technologies Corporation	Supporting Organization	Industry Women-Owned Small Business (WOSB)	Madison, Wisconsin

Primary U.S. Work Locations	
California	Wisconsin

Project Transitions

May 2013: Project Start

November 2013: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140376)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Sierra Nevada Corporation (SNC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

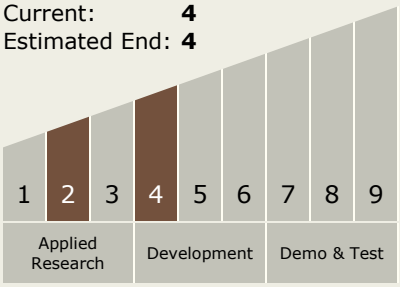
Carlos Torrez

Principal Investigator:

Robert C Richter

Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



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Images

Project Image
Zero G Mass Measurement Device (ZGMMD)
(https://techport.nasa.gov/image/131962)

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.3 In-Situ Instruments and Sensors
    - TX08.3.4 Environment Sensors

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System